

## **OPERATING THE FIREFINDER** (1987)

**8652**

### **DETERMINING AZIMUTH AND DISTANCE** (1987)

**8652.1**

To determine azimuth and distance, see Section [8611.1](#).

### **VERNIER USE** (1987)

**8652.2**

If readings to the nearest minute are desired, the vernier must be used. A vernier is a small scale placed parallel and in contact with the main scale or azimuth circle on the firefinder by which fractional parts of the smallest division on the circle can be accurately measured. Some of CDF's firefinders are graduated to one-quarter degree; most are graduated to one-half degree. Verniers on the firefinders are the direct vernier type and are so graduated that there is one more space within their length than exists in the corresponding distance on the main scale. Proper use of the vernier eliminates the guesswork in readings where the O of the vernier does not match exactly one of the divisions on the azimuth circle. You should use the O line or arrow, as the case may be, as an indicator and read the last division to the right on the azimuth circle.

Suppose this is a figure in degrees and minutes, as 173 degrees, 30 minutes (see [Minute Vernier](#)). Now the fact that the indicator was not on an even graduation on the azimuth circle makes the 173 degrees, 30 minutes figure not quite correct. The figure should actually be larger by a certain number of minutes. It is not safe to guess at this, and the vernier makes it possible to come very close on your final reading. The rule is to note the value of the mark on the vernier scale which matches or lines up evenly with any line on the azimuth circle. This reading gives the value in minutes of the unknown space on the azimuth circle between the last division on the azimuth circle and the O line, or arrow. Should this figure from the vernier read 12, then you simply add this to 173 degrees, 30 minutes, and the correct azimuth of your fire is 173 degrees, 42 minutes. The verniers on firefinders allow reading correct to the nearest minute.

### **DETERMINING VERTICAL ANGLE** (1987)

**8652.3**

On the rear sight of the firefinder is a sliding scale with a peep sight (small hole). There are also two sets of graduated scales. The scale on the right side of the sight is used to measure minus (-) vertical angles or dip angles. The scale on the left side of the slot is for measuring plus (+) angles.

- To measure a vertical angle, sight on the desired object.
- Discover if the fire is above or below (+ or -) the level of the lookout.

- If the fire is below the level of the lookout, sight through the peep sight at the lower crosshair, and read the minus or dip angle on the right side of the sight.
- If the fire or object is above the level of the lookout, sight through the peep at the intersection of the vertical hair and the upper crosshair, and read off the left side of the sight.

When reading, proceed away (either up or down) from 0 degrees. This will prevent reading -6 degrees, 20 minutes when it should be -5 degrees, 40 minutes. Vertical angles, when written or spoken, are preceded by a plus or minus to indicate the direction of the angle from horizontal.

## **DETERMINING WIDTH OF OBJECT**

**8652.4**

(1987)

When a fire is directly visible from a lookout, the dispatcher may ask for the width of the fire as seen by the lookout. This is done in the following manner:

- Sight on the right side of the fire, and record the horizontal angle from the firefinder on a piece of paper.
- Move the firefinder and sight on the left side of the fire; record this reading.
- Determine the difference in readings in minutes.
- Determine the distance to the fire.
- Apply the following rule:

Width (in feet) = 1.5 x Difference in Readings (in minutes) x Distance to Fire (in miles)

See [Determining Width of Area](#)

## **GENERAL RULES**

**8652.5**

(1987)

If lookouts would follow these rules, very few errors would be made in operating the firefinder:

- For horizontal angle readings use the slot sight, and sight from the bottom of the sight.
- When reading horizontal angles, read from right to left (clockwise), and add all unnumbered degrees and fractions to the numbered degree. Do not misread one-half degree graduations.

EXAMPLE: Reading of 93 degrees, 58 minutes

Read 90 degrees, then reading to the left add three whole degrees, add the small division representing one-half degree (30 minutes) read the vernier to the left and add the 28 minutes read there.

90 degrees + 30 minutes + 28 minutes =  
93 degrees, 58 minutes.

- Read vertical angles with the peep sight.
- For vertical angle readings:
  - For plus angles, read top hair and left scale.
  - For minus angles, read bottom hair and right scale.

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